What is claimed is:

1. A rolling, sliding part made from a bearing steel, a rolling, sliding surface thereof having a surface layer portion which is 56 to 64 in Rockwell C hardness, up to 12 vol. % in retained austenite content and 4 to 6 degrees in the X-ray half value width of martensite.

2. A rolling, sliding part according to claim 1 wherein the surface layer portion of the rolling, sliding surface is up to 1000 MPa in the absolute value of residual compressive stress.

3. A rolling, sliding part according to claim 1 wherein the surface layer portion is up to 9 vol. % in retained austenite content.

4. A rolling, sliding part according to claim 1 wherein the surface layer portion is 4 to 5 degrees in the X-ray half value width of martensite.

5. A rolling, sliding part according to claim 1 wherein the bearing steel comprises a high-carbon chromium bearing steel.

6. A rolling, sliding part according to claim 1 wherein the bearing steel comprises a case hardening steel.

7. A rolling, sliding part according to claim 1 wherein the surface layer portion of the rolling, sliding surface is up to 9 vol. % in retained austenite content, 4 to 5 degrees in the X-ray half value width of martensite and up to 1000 MPa in the absolute value of residual compressive stress.

8. A rolling bearing comprising an inner and an outer ring and a rolling body, the rolling body comprising a rolling, sliding part according to claim 1.

9. A rolling bearing comprises an inner and an outer ring and a rolling body, the rolling body being made from a high-carbon chromium bearing steel, a surface layer portion of a rolling surface of the rolling body having a surface hardness of 56 to 64 in terms of Rockwell C hardness and a retained austenite content of up to 9 vol. % and being 4 to 5 degrees in the X-ray half value width of martensite and up to 1000 MPa in the absolute value of residual compressive stress.

10. A ball bearing for use in alternators which comprises an inner and an outer ring and a ball, the outer ring having an outside diameter of 32 to 72 mm, the ball being made from a bearing steel and having a surface layer portion from the outermost surface of a rolling surface thereof to a depth of 0.2 mm which surface layer portion has a surface hardness of 56 to 64 in terms of Rockwell C hardness and a retained austenite content of up to 12 vol. % and is 4 to 6 degrees in the X-ray half value width of martensite.

11. A ball bearing for alternators according to claim 10 wherein the surface layer portion of the rolling surface is up to 1000 MPa in the absolute value of residual compressive stress.

12. A ball bearing for alternators according to claim 10 wherein the surface layer portion is up to 9 vol. % in retained austenite content.

13. A ball bearing for alternators according to claim 10 wherein the surface layer portion is 4 to 5 degrees in the X-ray half value width of martensite.

14. A process for producing a rolling, sliding part

characterized by subjecting to a hardening treatment a worked part blank made from a bearing steel in a predetermined shape, subjecting the hardened blank to a tempering treatment at least twice and surface-hardening the resulting blank.

15. A process for producing a rolling, sliding part according to claim 14 wherein the first tempering treatment is conducted at 150 to 170° C and the final tempering treatment is conducted at 180 to 250° C.

16. A process for producing a rolling, sliding part according to claim 14 wherein the tempering treatment is performed twice, and the first tempering treatment is conducted by holding the hardened blank at 150 to 170° C for 60 to 120 minutes, and the second tempering treatment is conducted by holding the resulting blank at 180 to 250° C for 60 to 120 minutes.

17. A process for producing a rolling, sliding part according to claim 16 wherein a rolling body for use in a rolling bearing is produced from a worked part blank made from a high-carbon chromium bearing steel in a predetermined shape.